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L37: Entry 31 of 31

File: USPT

Jul 28, 1998

US-PAT-NO: 5787425

DOCUMENT-IDENTIFIER: US 5787425 A

TITLE: Object-oriented data mining framework mechanism

DATE-ISSUED: July 28, 1998

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bigus; Joseph Phillip	Rochester	MN		

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
International Business Machines Corporation	Armonk	NY			02	

APPL-NO: 08/ 723599 [PALM]

DATE FILED: October 1, 1996

INT-CL: [06] G06 F 17/30

US-CL-ISSUED: 707/6; 707/103, 395/10, 395/21, 395/51

US-CL-CURRENT: 707/6; 706/27, 706/30, 706/52

FIELD-OF-SEARCH: 707/6, 707/103, 395/10, 395/21, 395/51

PRIOR-ART-DISCLOSED:

## U.S. PATENT DOCUMENTS

Search Selected

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	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<u>5692107</u>	November 1997	Simoudis et al.	395/50
<input type="checkbox"/>	<u>5717877</u>	February 1998	Orton et al.	395/326
<input type="checkbox"/>	<u>5724573</u>	March 1998	Agrawal et al.	707/6
<input type="checkbox"/>	<u>5727199</u>	March 1998	Chen et al.	707/6

ART-UNIT: 271

PRIMARY-EXAMINER: Black; Thomas G.

ASSISTANT-EXAMINER: Loomis; John C.

## ABSTRACT:

An object oriented framework for data mining operates upon a selected data source and produces a result file. Certain core functions are performed by the framework, which interact with the extensible function. This separation of core and extensible functions allows the separation of the specific processing sequence and requirement

of a specific data mining operation from the common attribute of all data mining operations. The user may thus define extensible functions that allow the framework to perform new data mining operations without the framework having the knowledge of the specific processing required by those operations.

29 Claims, 29 Drawing figures

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L36: Entry 1 of 2

File: USPT

Nov 25, 1997

US-PAT-NO: 5692107

DOCUMENT-IDENTIFIER: US 5692107 A

TITLE: Method for generating predictive models in a computer system

DATE-ISSUED: November 25, 1997

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Simoudis; Evangelos	San Mateo	CA		
Livezey; Brian K.	Menlo Park	CA		
Kerber; Randy G.	San Jose	CA		

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
Lockheed Missiles & Space Company, .Inc.	Sunnyvale	CA			02	

APPL-NO: 08/ 718226 [PALM]

DATE FILED: September 20, 1996

## PARENT-CASE:

This application is a continuation of Ser. No. 08/213,191 filed Mar. 15, 1994.

INT-CL: [06] G06 F 15/18

US-CL-ISSUED: 395/50; 395/75, 395/10

US-CL-CURRENT: 706/12; 706/45

FIELD-OF-SEARCH: 395/10-13, 395/50-52, 395/54, 395/75-77, 395/600

PRIOR-ART-DISCLOSED:

## OTHER PUBLICATIONS

Kaufman, K., R. Michalski, and L. Kerschberg. "Mining for Knowledge in Databases: Goals and General Description of the INLEN System." Knowledge Discovery in Databases. eds, G. Pietetsky-Shapiro and W. Frawley. AAAI/MIT 1991.

Miller, David B. "Classic Cliches". Midrange Systems, Mar. 23, 1993 v6 n6 p. 39(2).

Szladow, A. "Rough Sets Working with imperfect data". AI Expert Jul. 1993 v8 n7 p. 36(6).

Petrovsky, M. "How's your Business IQ?" HP Professional Feb. 1993 v7 n2 p. 42(3).

ART-UNIT: 239

PRIMARY-EXAMINER: Hafiz; Tariq R.

## ABSTRACT:

Data mining system including a user interface 102, a plurality of data sources 114, at least one top-down data analysis module 104 and at least one bottom-up data analysis module 104' in cooperative communication with each other and with the user interface 102, and a server processor 106 in communication with the data sources 114 and with the data analysis modules 104, 104'. Data mining method involving the integration of top-down and bottom-up data mining techniques to extract 208 predictive models from a data source 114. A data source 114 is selected 200 and used to construct 202 a target data set 108. A data analysis module is selected 203 and module specific parameters are set 205. The selected data analysis module is applied 206 to the target data set based on the set parameters. Finally, predictive models

are extracted 208 based on the target data set 108.

11 Claims, 5 Drawing figures

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L37: Entry 8 of 31

File: USPT

Nov 20, 2001

US-PAT-NO: 6321217

DOCUMENT-IDENTIFIER: US 6321217 B1

TITLE: Data analyzing method for generating rules

DATE-ISSUED: November 20, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Maeda; Akira	Yokohama			JP
Ashida; Hitoshi	Yokohama			JP
Taniguchi; Yoji	Ikeda			JP
Ito; Yukiyasu	Ebina			JP
Takahashi; Yori	Yokohama			JP

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Hitachi, Ltd.	Tokyo			JP	03

APPL-NO: 09/ 301595 [PALM]

DATE FILED: April 29, 1999

## PARENT-CASE:

CROSS-REFERENCE TO RELATED APPLICATION This application is a continuation of application Ser. No. 08/993,150, filed Dec. 18, 1997, U.S. Pat. No. 5,940,815, which is a continuation of application Ser. No. 08/470,217, filed Jun. 6, 1995, U.S. Pat. No. 5,761,389.

## FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	6-239437	September 7, 1994

INT-CL: [07] G06 F 17/00

US-CL-ISSUED: 706/47; 706/45, 706/48, 706/59, 706/61

US-CL-CURRENT: 706/47; 706/45, 706/48, 706/59, 706/61

FIELD-OF-SEARCH: 706/45-48, 706/59, 706/61

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

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	PAT-NO	ISSUE DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<u>4839822</u>	June 1989	Dormond et al.	706/47
<input type="checkbox"/>	<u>4970657</u>	November 1990	Wolf	706/47
<input type="checkbox"/>	<u>5129043</u>	July 1992	Yue	706/47
<input type="checkbox"/>	<u>5283856</u>	February 1994	Gross et al.	
<input type="checkbox"/>	<u>5422984</u>	June 1995	Iokibe et al.	706/12
<input type="checkbox"/>	<u>5465320</u>	November 1995	Enbutsu et al.	706/23
<input type="checkbox"/>	<u>5504840</u>	April 1996	Hiji et al.	706/61
<input type="checkbox"/>	<u>5579439</u>	November 1996	Khan	706/2
<input type="checkbox"/>	<u>5692107</u>	November 1997	Simoudis et al.	706/12
<input type="checkbox"/>	<u>5701400</u>	December 1997	Amado	706/47
<input type="checkbox"/>	<u>5732191</u>	March 1998	Kunemund et al.	706/8
<input type="checkbox"/>	<u>5761389</u>	June 1998	Maeda et al.	706/59

## OTHER PUBLICATIONS

Yazici, "Representing Imprecise Information in NF Relations, " Proceedings of IEEE Southeastcon '90, vol. 3, pp. 1026-1030, Apr. 1990.\*

R. Agrawal et al., "Database Mining: A Performance Perspective," IEEE Transactions on Knowledge and Data Engineering, vol. 5, No. 6, pp. 914-925, Dec. 1993.\*

J. Han et al., "Knowledge Discovery in Databases: An Attribute-Oriented Approach," Proceedings of the 18th VLDB Conference, pp. 547-559, Aug. 1992.\*

J. Han et al., "Data-Driven Discovery of Quantitative Rules in Relational Databases," IEEE Transactions on Knowledge and Data Engineering, vol. 5, No. 1, pp. 29-40, Feb. 1993.\*

R. Agrawal et al., "Mining Association Rules Between Sets of Items in Large Databases," Proceedings of 1993 ACM SIGMOD International Conference on Management of Data, pp. 207-216, May 1993.\*

M. Klemettinen et al., "Finding Interesting Rules from Large Sets of Discovered Association Rules," Proceedings of the 3rd International Conference on Information and Knowledge Management, pp. 401-407, Dec. 1994.\*

Quilan, J. Ross, Learning Efficient Classification Procedures and Their Application to Chess End Games, pp. 463-483.

Database mining; Extracting and synthesizing useful information from huge data banks provides a competitive edge in direct marketing (6 pages).

Hitachi; Data Front Neurohive ES/TOOL2/W-RI; pp. 1-10.

ART-UNIT: 212

PRIMARY-EXAMINER: Davis; George B.

## ABSTRACT:

A data analyzing method for generating a rule based on data items in a data base, wherein the rule expresses relational features of the data items. The invention includes a user interface and a rule generation module. The rule generation module, in response to an input from the user via the user interface, selects data items for use in a conditional clause and a conclusion clause of a rule from the data items stored in the data base, converts, when the selected data items have numerical values, the numerical values into symbolic values and creates plural candidate rules each expressing a correlation between selected data items in a rule form having one or plural sets of item names and symbolic values. The rule generation module further calculates a criterion for evaluating strength of correlation between data items in each of the candidate rules, determines one or plural candidate rules having highest calculated criterion from the candidate rules, and outputs to the user via the user interface the one or plural candidate rules.

4 Claims, 20 Drawing figures

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**Search Results - Record(s) 1 through 1 of 1 returned.**☐ 1. Document ID: US 5761389 A

L38: Entry 1 of 1

File: USPT

Jun 2, 1998

US-PAT-NO: 5761389

DOCUMENT-IDENTIFIER: US 5761389 A

TITLE: Data analyzing method and system

DATE-ISSUED: June 2, 1998

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Maeda; Akira	Yokohama-shi, Kanagawa-ken			JP
Ashida; Hitoshi	Yokohama-shi, Kanagawa-ken			JP
Taniguchi; Yoji	Ikeda-shi, Osaka-fu			JP
Ito; Yukiyasu	Ebina-shi, Kanagawa-ken			JP
Takahashi; Yori	Yokohama-shi, Kanagawa-ken			JP

APPL-NO: 08/ 470217

DATE FILED: June 6, 1995

## FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	6-239437	September 7, 1994

INT-CL: [06] G06 F 17/00

US-CL-ISSUED: 395/75; 395/50, 395/61

US-CL-CURRENT: 706/59; 706/11, 706/47

FIELD-OF-SEARCH: 395/11, 395/3, 395/61, 395/67, 395/22, 395/66, 395/77, 395/1, 395/21, 395/2, 395/50, 395/75

## PRIOR-ART-DISCLOSED:

## U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>5465320</u>	November 1995	Enbutsu et al.	395/22
<u>5579439</u>	November 1996	Khan	395/11

## OTHER PUBLICATIONS

Learning Efficient Classification Procedures and Their Application to Chess End Games; J. Ross Quinlan; pp. 463-483.  
Database mining; Extracting and syntesizing useful information from huge data banks provides a competitive edge in direct marketing; (6 pages).  
Hitachi; Datafront Neuroolive ES/TOOL2/W-RI; pp. 1-10.

ART-UNIT: 239

PRIMARY-EXAMINER: Hafiz; Tariq R.

## ABSTRACT:

A data analyzing method and system for generating a rule based on data items in a data base, wherein the rule expresses relational features of the data items. The invention includes a user interface and a rule generation module. The rule generation module, in response to an input from the user via the user interface, selects data items for use in a conditional clause and a conclusion clause of a rule from the data items stored in the data base, converts, when the selected data items have numerical values, the numerical values into symbolic values and creates plural candidate rules each expressing a correlation between selected data items in a rule form having one or plural sets of item names and symbolic values. The rule generation module further calculates a criterion for evaluating strength of correlation between data items in each of the candidate rules, determines one or plural candidate rules having highest calculated criterion from the candidate rules, and outputs to the user via the user interface the one or plural candidate rules.

44 Claims, 20 Drawing figures

Full	Title				CLS.1			REF.1		SEQ.1		ATT.1							
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Terms	Documents
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**Search Results - Record(s) 1 through 1 of 1 returned.**☐ 1. Document ID: US 5692107 A

L41: Entry 1 of 1

File: USPT

Nov 25, 1997

US-PAT-NO: 5692107

DOCUMENT-IDENTIFIER: US 5692107 A

TITLE: Method for generating predictive models in a computer system

DATE-ISSUED: November 25, 1997

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Simoudis; Evangelos	San Mateo	CA		
Livezey; Brian K.	Menlo Park	CA		
Kerber; Randy G.	San Jose	CA		

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
Lockheed Missiles & Space Company, Inc.	Sunnyvale	CA				02

APPL-NO: 08/ 718226

DATE FILED: September 20, 1996

## PARENT-CASE:

This application is a continuation of Ser. No. 08/213,191 filed Mar. 15, 1994.

INT-CL: [06] G06 F 15/18

US-CL-ISSUED: 395/50; 395/75, 395/10

US-CL-CURRENT: 706/12; 706/45

FIELD-OF-SEARCH: 395/10-13, 395/50-52, 395/54, 395/75-77, 395/600

## PRIOR-ART-DISCLOSED:

## OTHER PUBLICATIONS

Kaufman, K., R. Michalski, and L. Kerschberg. "Mining for Knowledge in Databases: Goals and General Description of the INLEN System." Knowledge Discovery in Databases. eds, G. Pietetsky-Shapiro and W. Frawley. AAAI/MIT 1991.

Miller, David B. "Classic Cliches". Midrange Systems, Mar. 23, 1993 v6 n6 p. 39(2).

Szladow, A. "Rough Sets Working with imperfect data". AI Expert Jul. 1993 v8 n7 p. 36(6).

Petrovsky, M. "How's your Business IQ?" HP Professional Feb. 1993 v7 n2 p. 42(3).

ART-UNIT: 239

PRIMARY-EXAMINER: Hafiz; Tariq R.

## ABSTRACT:

Data mining system including a user interface 102, a plurality of data sources 114, at least one top-down data analysis module 104 and at least one bottom-up data analysis module 104' in cooperative communication with each other and with the user interface 102, and a server processor 106 in communication with the data sources 114 and with the data analysis modules 104, 104'. Data mining method involving the integration of top-down and bottom-up data mining techniques to extract 208

predictive models from a data source 114. A data source is selected 200 and used to construct 202 a target data set 108. A data analysis module is selected 203 and module specific parameters are set 205. The selected data analysis module is applied 206 to the target data set based on the set parameters. Finally, predictive models are extracted 208 based on the target data set 108.

11 Claims, 5 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw Desc	Image
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L37: Entry 12 of 31

File: USPT

May 29, 2001

US-PAT-NO: 6240411

DOCUMENT-IDENTIFIER: US 6240411 B1

TITLE: Integrating campaign management and data mining

DATE-ISSUED: May 29, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Thearling; Kurt	Cambridge	MA		

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Exchange Applications, Inc.	Boston	MA			02

APPL-NO: 09/ 097875 [PALM]

DATE FILED: June 15, 1998

INT-CL: [07] G06 F 17/30

US-CL-ISSUED: 707/5; 707/6

US-CL-CURRENT: 707/5; 707/6

FIELD-OF-SEARCH: 707/5, 707/6, 706/12

PRIOR-ART-DISCLOSED:

## U.S. PATENT DOCUMENTS

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	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<u>5692107</u>	November 1997	Simoudis et al.	706/12
<input type="checkbox"/>	<u>5754939</u>	May 1998	Herz et al.	455/42
<input type="checkbox"/>	<u>5950189</u>	September 1999	Cohen et al.	707/3
<input type="checkbox"/>	<u>5953718</u>	September 1999	Wical	707/5
<input type="checkbox"/>	<u>5974412</u>	October 1999	Hazlehurst et al.	707/3
<input type="checkbox"/>	<u>5983220</u>	November 1999	Schmitt	707/5
<input type="checkbox"/>	<u>6052693</u>	April 2000	Smith et al.	707/104
<input type="checkbox"/>	<u>6121969</u>	September 2000	Jain et al.	345/355

## OTHER PUBLICATIONS

Exchange Applications, ValeX User Guide.

Bayer, J., Ceres Integrated Solutions, "Automated Response Modeling System for Targeted Marketing", (1998).

Campanelli, M., "AMS Forms Strategic Alliance with SAS Institute", Press Release, (1998).

Versatility Inc., "Versatility Campaign Plus", (1998).

ART-UNIT: 211

PRIMARY-EXAMINER: Amsbu Wayne

## ABSTRACT:

Method and apparatus are disclosed for integration of campaign management and data mining. The method and apparatus disclose incorporating references to data mining models into the campaign management process. In some embodiments, this permits evaluating the data mining model for fewer than all of the records in a database, potentially saving computation time. The method and apparatus can include building queries for a database or ranking criteria for records in a database that include a reference to a data mining model.

27 Claims, 17 Drawing figures